

WHAT IS CLAIMED:

- 1           1. An apparatus, comprising:  
2           a substrate defining a plane;  
3           a first conducting plate substantially normal to the substrate; and  
4           a second conducting plate substantially normal to the substrate and deformable  
5           in response to a pressure.
  
- 1           2. The apparatus of claim 1, wherein the substrate is associated with a  
2           microelectromechanical system wafer.
  
- 1           3. The apparatus of claim 1, wherein the second conducting plate is  
2           deformable in a direction substantially in the first plane.
  
- 1           4. The apparatus of claim 3, wherein the two conducting plates are electrically  
2           isolated, and the pressure is to be measured based at least in part on capacitance  
3           between the two conducting plates.
  
- 1           5. The apparatus of claim 4, wherein a voltage level is associated with at least  
2           one of the conducting plates.
  
- 1           6. The apparatus of claim 1, wherein the first conducting plate is also  
2           deformable in response to the pressure.
  
- 1           7. The apparatus of claim 6, wherein the conducting plates comprise  
2           diaphragms.

1           8. The apparatus of claim 1, wherein the substrate includes at least one of: (i)  
2 a silicon layer, (ii) an oxide layer, and (iii) a bonding layer.

1           9. The apparatus of claim 1, wherein the substrate is bonded to a backing  
2 wafer.

1           10. An apparatus, comprising:  
2 a substrate defining a first plane;  
3 a first finger, including a first pair of conducting plates, wherein at least one of  
4 the conducting plates is substantially normal to the substrate and deformable in  
5 response to pressure, and wherein a vacuum is provided between the first pair of  
6 conducting plates; and  
7 a second finger, including a second pair of conducting plates, wherein at least  
8 one of the conducting plates is substantially normal to the substrate and deformable in  
9 response to pressure, and wherein a vacuum is provided between the second pair of  
10 conducting plates.

1           11. The apparatus of claim 10, wherein the first pair of conducting plates is  
2 electrically isolated from the second pair of conducting plates.

1           12. The apparatus of claim 11, wherein pressure is to be measured based at  
2 least in part on capacitance between the fingers.

1           13. The apparatus of claim 12, wherein (i) the first finger is part of a first  
2 comb having a plurality of fingers that are electrically coupled to each other, and (ii)  
3 the second finger is part of a second comb having a plurality of fingers that are  
4 electrically coupled to each other and electrically isolated from the fingers of the first  
5 comb.

1           14. The apparatus of claim 13, wherein fingers of the first are second combs  
2 are interleaved.

1           15. The apparatus of claim 14, wherein the combs form an array of capacitors  
2 connected in parallel.

1           16. The apparatus of claim 12, wherein the measured pressure is an absolute  
2 pressure.

1           17. The apparatus of claim 12, wherein at least one of the conducting plates is  
2 deformable in response to a first pressure and at least one of the conducting plates is  
3 deformable in response to a second pressure, and wherein the measured pressure is  
4 associated with the difference between the first and second pressures.

1           18. The apparatus of claim 12, wherein an increase in pressure is associated  
2 with a decrease in capacitance.

1           19. The apparatus of claim 12, wherein an increase in pressure increases a  
2 distance between one of the conducting plates of the first finger and one of the  
3 conducting plates of the second finger.

1           20. The apparatus of claim 12, wherein air acts as a dielectric associated with  
2 the capacitance.

1           21. A method, comprising:  
2           providing a voltage to one of a first conducting plate and a second conducting  
3 plate, the first conducting plate being substantially normal to a substrate defining a

4 plane and the second conducting plate being (i) electrically isolated from the first  
5 conducting plate, (ii) substantially normal to the substrate, and (iii) deformable in  
6 response to pressure; and

7 measuring pressure based at least in part on capacitance between the two  
8 conducting plates.

1 22. A method, comprising:

2 on a wafer that includes a first non-conducting layer bonded onto a conducting  
3 layer, etching substantially parallel trenches through the layers to form a plurality of  
4 conducting plates substantially normal to a plane defined by the wafer, wherein at  
5 least one conducting plate is to be deformable in response to pressure; and

6 bonding a second non-conducting layer onto the first non-conducting layer.

1 23. The method of claim 22, wherein pairs of conducting plates form fingers.

1 24. The method of claim 23, wherein a first set of fingers is formed on a first  
2 comb and a second set of fingers is formed on a second comb, the fingers of the first  
3 and second combs being interleaved.

1 25. The method of claim 24, further comprising:

2 etching away a portion of the second non-conducting layer and the first non-  
3 conducting layer to expose a portion of the conducting layer.

1 26. The method of claim 25, further comprising:

2 creating a vacuum within a finger.

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1           27. The method of claim 25, further comprising:  
2           bonding a cap wafer onto the second non-conducting layer.

1           28. The method of claim 27, wherein the cap wafer includes at least one of: (i)  
2           a ground via, (ii) a voltage via, (iii) a first pressure via, and (iv) a second pressure via.

1           29. The method of claim 22, wherein at least one pressure input cavity is  
2           formed while etching the trenches.

1           30. A system, comprising:  
2           a microelectromechanical system pressure sensor, including:  
3                 a substrate defining a plane,  
4                 a first conducting plate substantially normal to the substrate, and  
5                 a second conducting plate substantially normal to the substrate and  
6           deformable in response to a pressure; and  
7           a pressure dependent device.

1           31. The system of claim 30, wherein the pressure dependent device is  
2           associated with at least one of: (i) a pressure display, (ii) a tire pressure monitor, (iii)  
3           an ultrasonic transducer, (iv) a blood pressure sensor, and (v) a barometer.

1           32. An apparatus, comprising:  
2           a substrate defining a plane; and  
3           a deformable plate substantially normal to the substrate and deformable in  
4           response to a pressure.

1           33. The apparatus of claim 32, wherein an amount of resistance associated  
2 with the deformable plate varies with stress.

1           34. The apparatus of claim 33, wherein the substrate is associated with a  
2 microelectromechanical system wafer.

1           35. The apparatus of claim 34, wherein the deformable plate is a diaphragm  
2 deformable in a direction substantially in the plane defined by the substrate.

1           36. The apparatus of claim 35, wherein the diaphragm is associated with at  
2 least one of: (i) piezoelectric characteristics, (ii) piezoresistance characteristics, (iii)  
3 an embedded device having piezoelectric characteristics, and (iv) an embedded  
4 device having piezoresistance characteristics.